Assessing Educational Requirements For Skillpower

A look at how five manufacturers
and three service businesses in Ontario
view the educational requirements
of their 28,500 employees
between 1965 and 1970

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port of the Ontario Economic Council, 1966

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Foreword

ONTARIO'S greatly accelerated post-war investment in education has been termed the "greatest gamble ever taken by the province's taxpayers."

It has been a multi-billion dollar bet based on the odds that higher standards of educational achievement normally lead to higher standards of both individual and national productivity and to a readier attainment, individually and collectively, of desirable social goals.

To the great majority of the citizenry, the gamble seems to have been a justifiable one. Public criticism of ballooning educational budgets has not been widespread. There have, on the other hand, been attacks on governments at all levels for their alleged failure to remove any remaining financial barriers to further schooling.

Only comparatively recently, however, have attempts been made to relate forward skill supply and demand over a period of time adequate to allow for even minor curricular revisions. And there has yet to be evolved a formula which will permit a productivity evaluation related to specific areas of educational investment.

As we continue to increase the proportion of our tax dollars going into what is sometimes referred to as "human resource development", more precise criteria of measurement will not only be needed but demanded. But the complexity of the problem, let alone its solution, can hardly be overemphasized.

Even if one were able to assess accurately, for example, the number of lawyers required in Ontario a decade hence, what assurance would we have that some substantial percentage of those who graduate in law, or even who are called to the bar, would not find greater personal satisfaction in allied but different callings? How many graduate nurses will actually be available to our hospitals? How many professional foresters will be directly involved in woods management?

Matching supply and demand at even the elementary skill level assumes a degree of control over the disposition of human resources which would be repugnant to many of the people who now call for governmental projection and planning in depth and detail.

Yet much more can and must be done, and this study, similar to one undertaken by the Economic Council of Canada, samples some of the problems and potentials of forecasting skill demand.

Because of the general unfamiliarity within industry and commerce with skill demand forecasting — an unfamiliarity, incidentally, which is at least

Foreword
(Continued)

equalled within the public sector — only a relatively small number of companies participated in this test audit.

The eight firms, employing 28,500 persons, were, moreover, far from typical in that only two had less than 1,000 employees and each had relatively highly developed personnel departments and policies.

Despite this fact, to most of those who were asked to carry out the skill survey in each company, it was both an unfamiliar and somewhat irksome task, especially at a time of practically universal skill shortages. Yet, when concluding the submissions, each firm reported that it had found the project both informative and useful in the development of its own policies.

It may well be that some day we will find it wise to invest as much time and money in taking stock of human resources as in taking inventory of materials.

One can find satisfaction in the employment growth trends forecast. They exceed by 20% that called for by the Economic Council of Canada.

One can appreciate the increasing emphasis on academic achievement and vocational training within the school system which characterized the demand forecasts of almost all participating companies. At the same time one cannot help but wonder whether the growing trend toward using secondary school graduation as an almost universal condition of entry into even the relatively unskilled labour classifications is entirely realistic, and whether an academic or vocational certificate can be so fully substituted for what may be somewhat more onerous but more proven methods of evaluating motivation, initiative and ability.

It is evident, however, that even if one may question at times the total validity of the concept, there is likely in the next decade to be a substantial measure of employment discrimination in favour of those young men and women who have completed secondary schooling. And the opportunities for those who have taken some measure of post secondary technological or trades training appear to be expanding more rapidly than those of any other segment of the work force.

This is but one of a number of studies in the area of skill demand forecasting which are planned by the Ontario Economic Council, in co-operation with other provincial and federal agencies and departments. We trust that these findings will make some contribution toward our economic growth and prosperity.

To those firms and their staffs whose efforts made this report possible, we extend our sincere thanks.

William H. Cranston,
Chairman.

September, 1966.

Terms of Reference

Following conversations between the Economic Council of Canada and the Ontario Economic Council, this study was initiated in the late summer of 1965. Its objectives and procedures followed the lines set out for the larger, nationwide study by the Economic Council of Canada.

Thus, in addition to the benefits of cross-verification of developed trend data, it was possible to avoid overlap in the field.

An informal review of final results indicates a high degree of agreement in the two studies.

Size and Scope of Survey

Because no such survey had been previously attempted, there was no recorded experience to serve as a guide to procedure. The selection of companies, their size, the nature of their operations or their location in no way represent a valid sample. It is for this reason that the results summarized here are reported for their value as *trends only*.

Eight Ontario-based companies participated. Five were manufacturing enterprises; three were service businesses. One of the latter was an insurance company, and one a national bank.

The total of employees represented in 1965 was about evenly divided between the two groups. Only two of the companies had fewer than 1,000 employees.

Summary and Comment

Despite the many shortcomings in selection, the data reveal clear and consistent trends.

From 1965 to 1970 the companies in the sample expect their work-force to grow about 20% faster than the growth of the national labour force for the period as forecast by the Second Annual Review of the Economic Council of Canada.

Accompanying that growth is a radical upgrading of educational qualifications. Most marked in this respect are the projected increases (in the area of 70%) in the employment of university post-graduates and of graduates of technological institutes, and projected increases of 50% in the personnel from technical high schools.

Manufacturers in the test group project a much greater rate of employee growth than the service businesses, 28% as opposed to 8%; and almost triple the demand with grade 12 or higher. (It should be noted, however, that much of the postwar growth in service businesses has taken place, and will continue to take place, in units employing substantially fewer persons than the firms represented in this sample.)

There is also a surging demand for persons with secondary-school educations in semi-skilled and labouring-type occupations.

The relative lack of demand among the companies in the test group for trade-school graduates is quite possibly misleading. There were no small businesses in the test group, no construction companies, and no retailers or wholesalers. Such organizations are substantial employers of such graduates.

Because the economic activities of each area or community vary, with resultant variations in the demand for skills, such studies as this can only provide trend data related to the region or regions within which the companies surveyed are located.

Total Employment Demand Projection

In the table below are recorded the 1965 and 1970 employment data for the test group of companies, classified under four educational qualifications.

The overall trend to the employment of more and more persons with advanced and specialized qualifications is evident, as is also the shrinkage of opportunity for those without secondary schooling.

Despite the important increases in groups A and B, the numbers represented (1002 more employees) are much fewer than the 5024 additional persons in Group C with secondary school education, though the growth rate in this latter group (29%) is somewhat lower.

Possibly most impressive is the fact that the number of employees of these companies with employment qualification of high school graduation or better is expected to grow by more than 6,000 — an increase of 30.5% over 1965.

EDUCATIONAL PROJECTION	1965		1970		% Increase 1970 over 1965
	Total Employment	% of the Whole	Total Employment	% of the Whole	
A. UNIVERSITY GRADUATES	1,298	4.5	1,728	5.2	+33.1
Technical & Scientific	921	3.2	1,193	3.6	+29.5
All Other	377	1.3	535	1.6	+41.5
B. POST HIGH SCHOOL	1,421	4.9	1,993	5.9	+39.5
Technological Inst.	353	1.2	717	2.1	+103.1
All Other	1,068	3.7	1,276	3.8	+19.5
C. SECONDARY SCHOOL GRADUATES	17,019	59.8	22,043	65.9	+29.0
Technical High School	1,470	5.2	2,606	7.8	+77.3
Regular High School	15,227	53.5	19,073	57.0	+25.3
Vocational or Trade	322	1.1	364	1.1	+13.0
D. NON-HIGH SCHOOL	8,770	30.8	7,708	23.0	−12.5
Vocational or Trade	81	0.3	92	0.3	+13.6
All Other	8,689	30.5	7,616	22.7	−12.5
		100.0		100.0	
Total	28,508		33,472		+17.4

Major Trends All Employees

In the table on page 7 were shown trend figures for each of four general educational classifications.

Chart 1 opposite this page spells out further the educational qualifications demand within those four groups.

University graduates with a first degree numbered 1,188 in these eight companies in 1965; the 17 per cent average growth would have indicated 202 additional people. The forecast of 322 additional is thus quite limited in contrast with the 108 employees with post-graduate degrees sought, where only 110 were employed as of 1965.

Equally strong is the demand for graduates of the technological institutes in comparison with "all other" post-high school training.

The requirement for high school graduates is strong (7% beyond the average 17% growth rate) but is overshadowed by the heavy projected requirement for technical high school graduates.

Complementary to all of the above is the major shrinkage in skilled personnel with non-high school or undertermined qualifications, an actual reduction in the five years of over 1,650 persons.

High School Graduates

High school graduates appear in both 1965 and 1970 in all occupations from labour up to and including administrative. All high school graduates are grouped together in Chart 1; in all succeeding charts they are shown only against their specific occupational classifications.

Vocational or Trade School

Because graduates of vocational schools are drawn into service industries and construction — and in particular into many varieties of smaller businesses, including the distributive trades — there was little reflection of this demand in the trial group reported here.

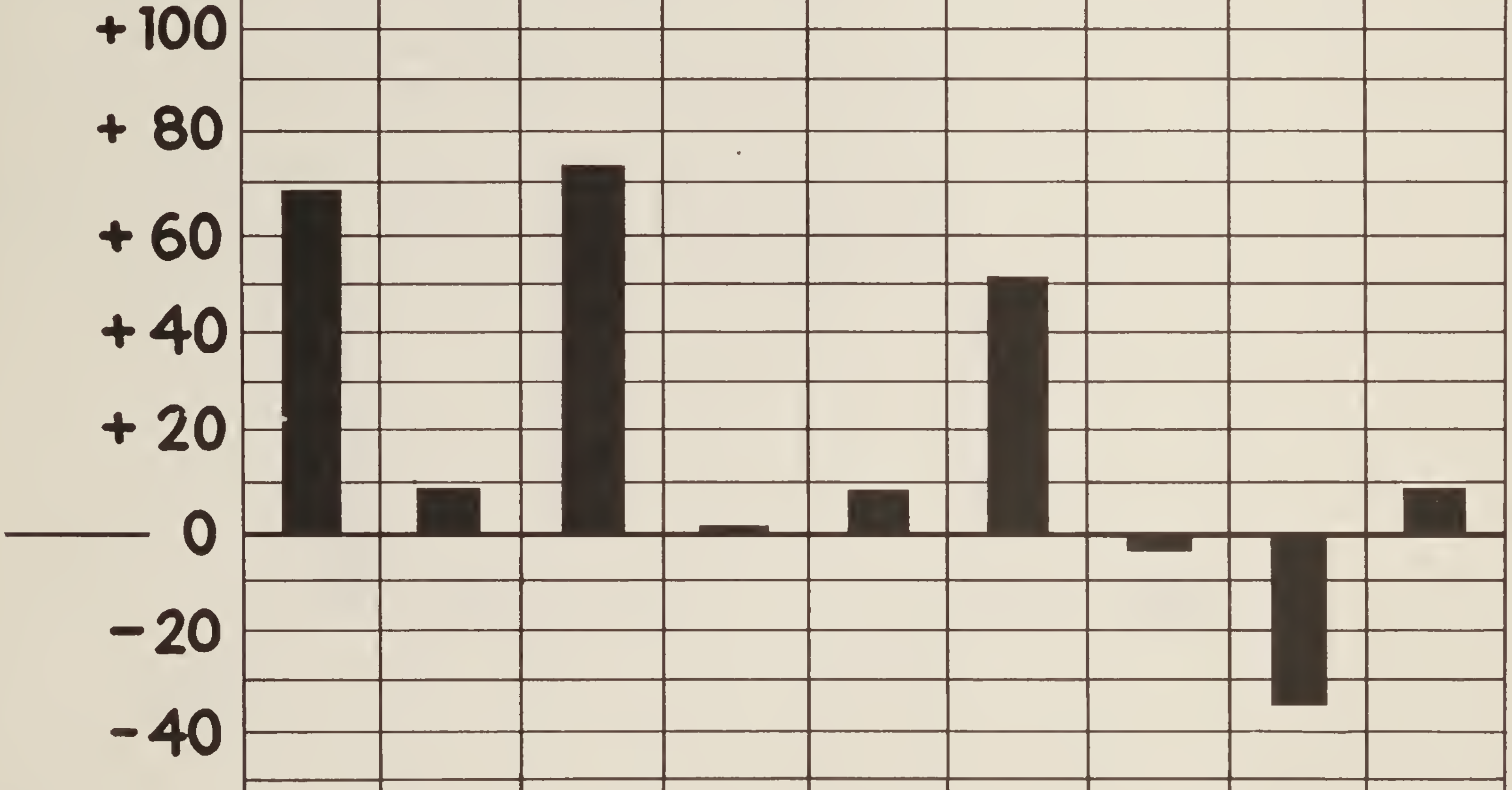
The projected demand for trade-school graduates may thus be much underestimated.

CHART I

EDUCATIONAL QUALIFICATIONS ...all employees

UNIVERSITY POST-GRADUATES AND TECHNOLOGICAL INSTITUTE GRADUATES INCREASE BY AS MUCH AS 73%* IN TEST GROUP, NON-HIGH SCHOOL DECLINE BY 36%*

	UNIVERSITY		POST HIGH SCHOOL		HIGH SCHOOL & SKILLED				NO EDUC. QUALIF'N.
	POST GRAD.	FIRST DEGREE ONLY	TECHNOLOGICAL INST.	ALL OTHER	HIGH SCHOOL	TECH. HIGH	TRADE SCHOOL	NON-H.S. OR UNDET.	SEMI-SKILLED AND UNSKILLED
1970 vs. 1965 % INCREASE (+) OR DECREASE (−) BEYOND AVERAGE 17% GROWTH NORM	+69	+9	+73	+2	+7	+52	−3	−36	+9



EMPLOYEES EACH QUALIFICATION	POST GRAD.	FIRST DEGREE ONLY	TECHNOLOGICAL INST.	ALL OTHER	HIGH SCHOOL	TECH. HIGH	TRADE SCHOOL	NON-H.S. OR UNDET.	SEMI-SKILLED AND UNSKILLED
1970	218	1510	717	1276	19073	2606	456	4913	2703
1965	110	1188	353	1068	15227	1470	403	6566	2123

TOTAL	% INCREASE by 1970
1970 - 33,472	
1965 - 28,508	+ 17.4

* ALL PERCENTAGE INCREASES OR DECREASES ARE NET DEVIATIONS ABOVE OR BELOW 17% GROWTH NORM OF THE TEST GROUP.

Growth Rates by Occupation and Educational Requirement

Charts I through X reflect the trends of both occupational and educational requirements.

The following points should be noted:

— the average total employment growth rate of 17% shown in the table on page 7 has been taken in all charts as the norm for comparative purposes. Thus percentage changes in Charts I through X are only those percentages in excess of, or short of, 117% of 1965 employment.

— where an occupational group in 1970 is less than 10 persons it has been considered not significant and no trend percentage shown.

Undoubtedly the most significant information conveyed by these charts is the swiftly developing demand for higher educational qualifications.

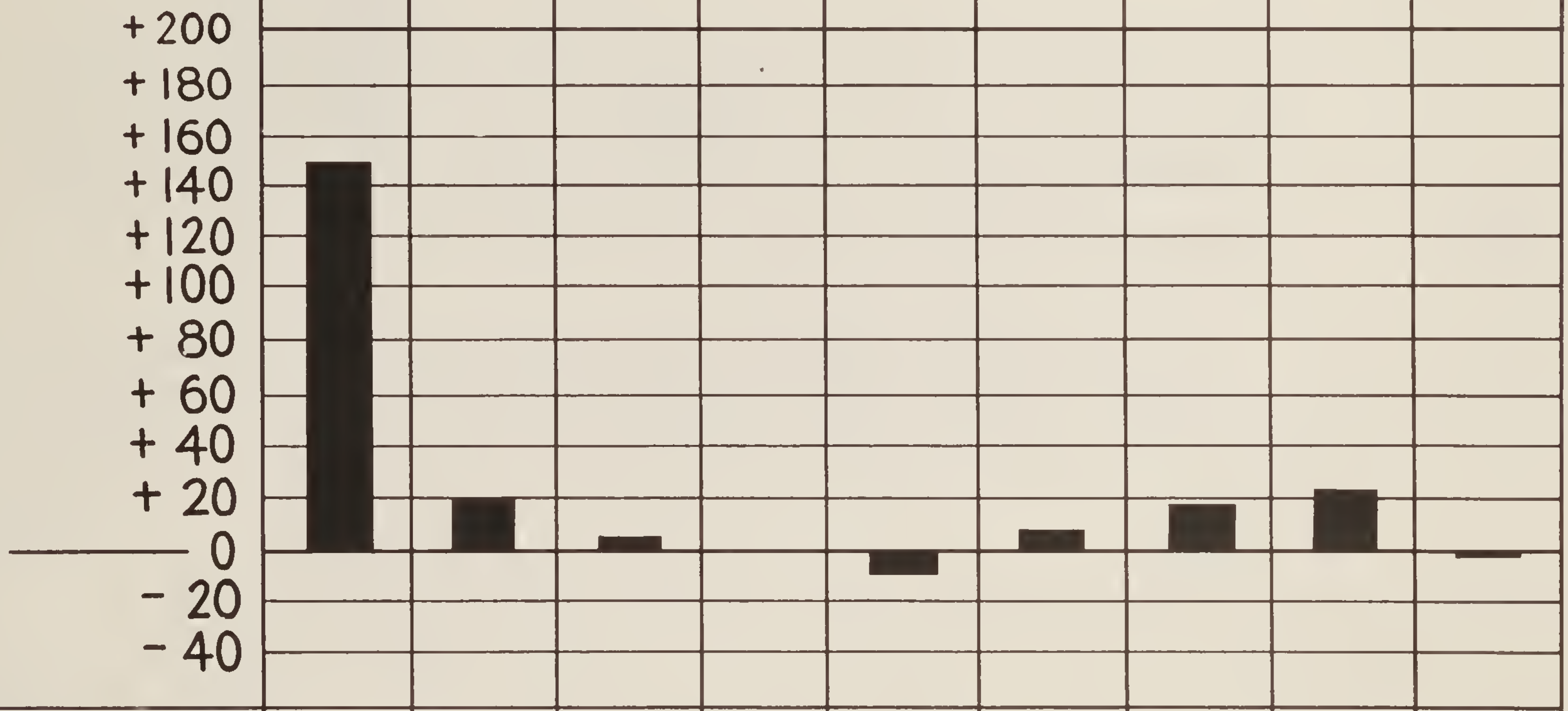
Since the educational base is progressive from right to left in all charts, running from minimal education through high school and post-high school to university post graduate, the prevalence of losses at the right and gains at the left is marked. The pattern is apparent in all ten charts in the six pages.

CHART II

PROFESSIONAL EMPLOYEES

WHILE THE DEMAND FOR POST-GRADUATE ENGINEERS SHOULD RISE BY 152%*, ENGINEERING GRADUATES WITH FIRST DEGREE ONLY ARE EXPECTED TO DROP BY 7%*

	UNIVERSITY POST-GRADUATE			UNIVERSITY FIRST DEGREE			POST HIGH SCHOOL	HIGH SCHOOL
	ENGINEERS	PHYSICAL SCIENTISTS	OTHER PROFESSIONALS	ENGINEERS	PHYSICAL SCIENTISTS	OTHER PROFESSIONALS		
1970 vs. 1965 % INCREASE (+) OR DECREASE (−) BEYOND AVERAGE 17% GROWTH NORM ➧	+152	+20	+5	−7	+9	+18	+23	-2



EMPLOYEES EACH QUALIFICATION								
1970	78	37	39	677	36	103	92	23
1965	26	26	32	619	28	74	64	20

* ALL PERCENTAGE INCREASES OR DECREASES ARE NET DEVIATIONS ABOVE OR BELOW 17% GROWTH NORM OF THE TEST GROUP.

In the Administrative group (Chart III opposite) the increasing demand for persons of advanced or specialized education is progressively more marked as one moves higher on the scale of skills (from right to left on the chart). One exception to the trend stands out in the area of high school qualifications; those coming from the technical high schools are preferred above other courses for administrative and sales responsibilities.

Somewhat surprisingly the Sales group shows the same overall preference as previously noted for university post-graduates, and graduates of the technological institutes and technical high schools.

ADMINISTRATIVE AND SALES

THE NUMBER OF POST-GRADUATES IN ADMINISTRATIVE POSTS SHOULD INCREASE BY 127%* BY 1970, BUT PERSONNEL WITH NON-HIGH SCHOOL MAY BE DOWN BY 25%* IN BOTH ADMINISTRATION AND SALES

CHART III

ADMINISTRATIVE

	UNIVERSITY		POST HIGH SCHOOL		HIGH SCHOOL AND SKILLED			
	POST GRAD.	FIRST DEGREE ONLY	TECHNOLOGICAL INST.	ALL OTHER	HIGH SCHOOL	TECH HIGH	TRADE SCHOOL	NON-H.S. OR UNDET.
1970 vs. 1965 % INCREASE (+) OR DECREASE (−) BEYOND AVERAGE 17% GROWTH NORM	+127	+15	+43	+1	−11	+14	-8	-26
EMPLOYEES EACH QUALIFICATION 1970	53	283	60	266	1179	225	111	315
EMPLOYEES EACH QUALIFICATION 1965	20	210	36	225	1129	168	102	363

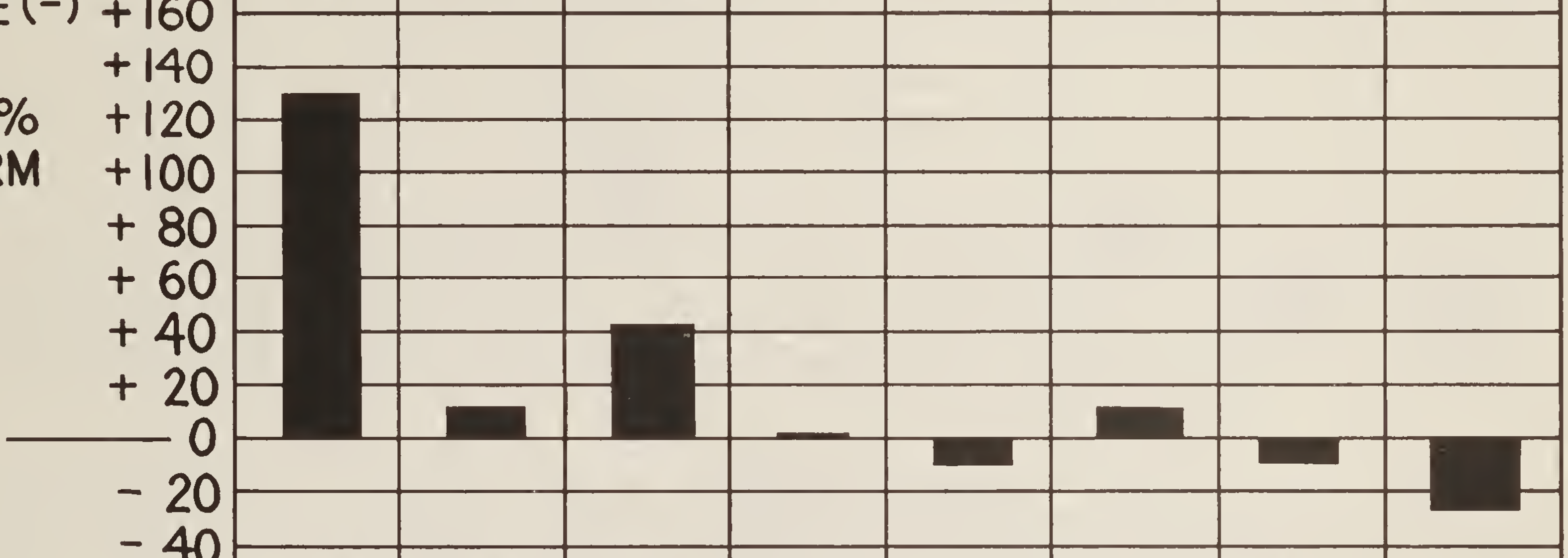
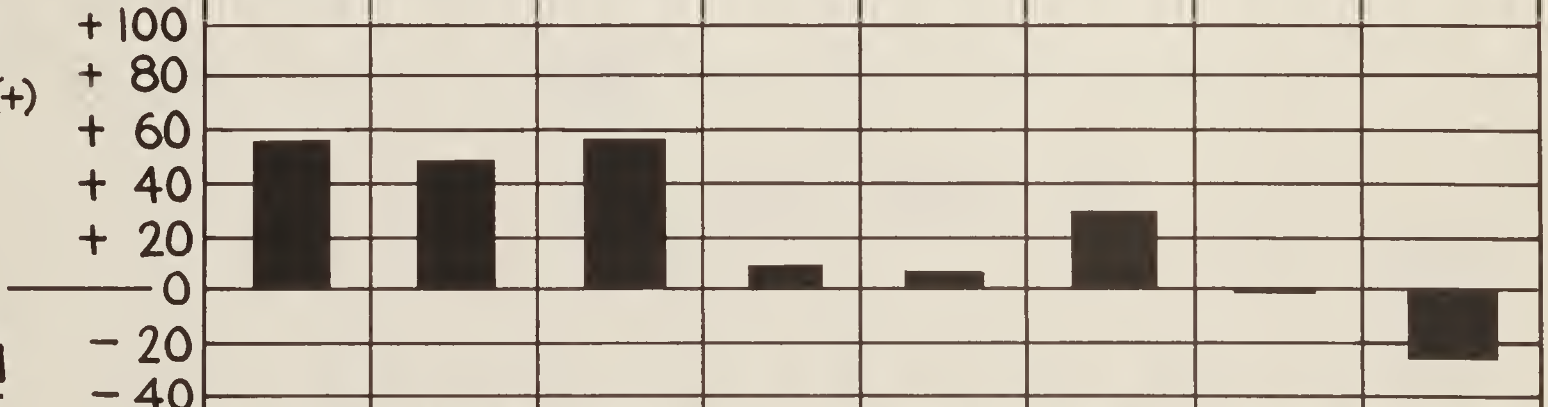


CHART IV

SALES

	POST GRAD.	FIRST DEGREE ONLY	TECHNOLOGICAL INST.	ALL OTHER	HIGH SCHOOL	TECH HIGH	TRADE SCHOOL	NON-H.S. OR UNDET.
1970 vs. 1965 % INCREASE (+) OR DECREASE (−) BEYOND AVERAGE 17% GROWTH NORM	+57	+48	+57	+11	+5	+32	-1	-25
EMPLOYEES EACH QUALIFICATION 1970	11	332	55	157	930	95	22	459
EMPLOYEES EACH QUALIFICATION 1965	6	192	30	120	754	61	19	524



* ALL PERCENTAGE INCREASES OR DECREASES ARE NET DEVIATIONS ABOVE OR BELOW 17% GROWTH NORM OF THE TEST GROUP.

The Clerical group in Chart V shows an extremely heavy concentration of high school graduates. Two companies in the sample had very large clerical concentrations, and this may have produced an over-heavy representation of high school graduates.

While the growth of demand for graduates of technological institutes and technical high schools is noticeable, it is not significant in the overall size of the Clerical Group.

On the other hand, the demand for these two types of graduates is most pronounced in the Technical classification (Chart VI). The number of high school graduates employed in 1965 was 53 and is expected to rise to 68 by 1970. But the employment of post-secondary school and technical high school graduates together was 497 in 1965, and is projected to increase to 700 by 1970.

CLERICAL AND TECHNICAL

EMPLOYMENT POTENTIAL FOR THOSE WITH MORE ADVANCED OR SPECIALIZED EDUCATION SHOWS THE SAME PATTERN OF GAINS *

CHART V

CLERICAL

1970 vs. 1965 % INCREASE (+) OR DECREASE (-) BEYOND AVERAGE 17% GROWTH NORM.

	UNIVERSITY		POST HIGH SCHOOL		HIGH SCHOOL AND SKILLED			
	POST GRAD.	FIRST DEGREE ONLY	TECHNOLOGICAL INST.	ALL OTHER	HIGH SCHOOL	TECH. HIGH	TRADE SCHOOL	NON-H.S. OR UNDET.
%		+3	+24	-2	-5	+11	-20	-23
EMPLOYEES EACH QUALIFICATION 1970		72	45	686	14089	180	77	1925
EMPLOYEES EACH QUALIFICATION 1965		60	31	599	12686	138	82	2119

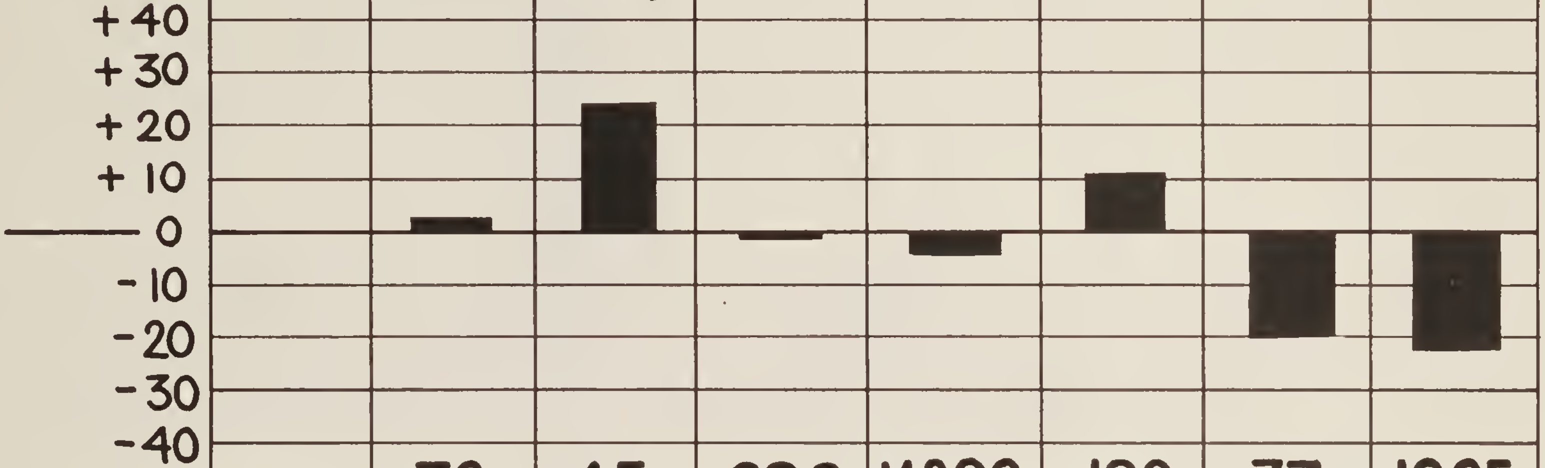
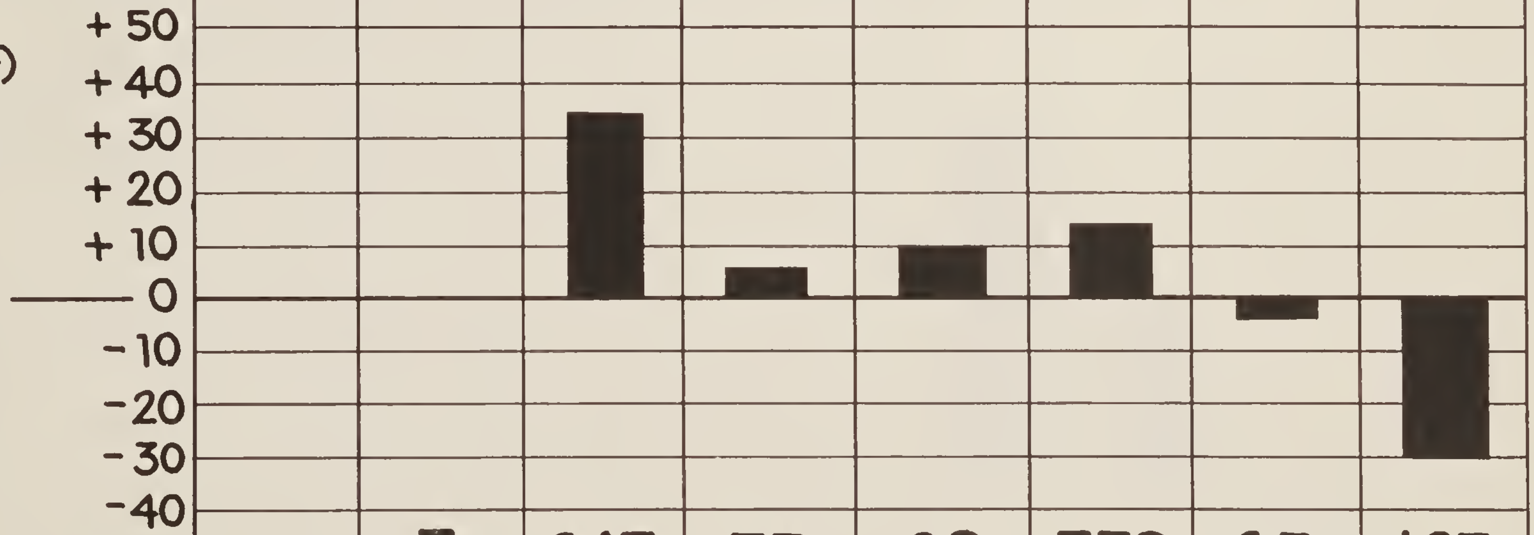


CHART VI

TECHNICAL

1970 vs. 1965 % INCREASE (+) OR DECREASE (-) BEYOND AVERAGE 17% GROWTH NORM.

	UNIVERSITY		POST HIGH SCHOOL		HIGH SCHOOL AND SKILLED			
	POST GRAD.	FIRST DEGREE ONLY	TECHNOLOGICAL INST.	ALL OTHER	HIGH SCHOOL	TECH. HIGH	TRADE SCHOOL	NON-H.S. OR UNDET.
%		* *	+34	+7	+10	+15	-4	-30
EMPLOYEES EACH QUALIFICATION 1970		7	247	75	68	378	65	163
EMPLOYEES EACH QUALIFICATION 1965		5	157	60	53	280	58	197



* ALL PERCENTAGE INCREASES OR DECREASES ARE NET DEVIATIONS ABOVE OR BELOW 17% GROWTH NORM OF THE TEST GROUP.

** GROUPS OF UNDER 10 PERSONS (1970) CONSIDERED NOT SIGNIFICANT.

The sharp increase in the demand for graduates of technological institutes is again noticeable in the Skilled Tradesmen classification (Chart VII) but does not exist in the Skilled Operatives area (Chart VIII). There is however a corresponding heavy demand in the latter classification for technical high school graduates.

Skilled Tradesmen constitute between 3½% and 4% of total employment in both years. In 1965 some 10% received their education in technological institutes; in 1970 it is expected that 25% will come from that source.

Skilled operatives represented 6% of total employees both in 1965 and in the estimate for 1970. Only 24% were high school graduates in 1965; 60% are expected to have graduated from high school in 1970.

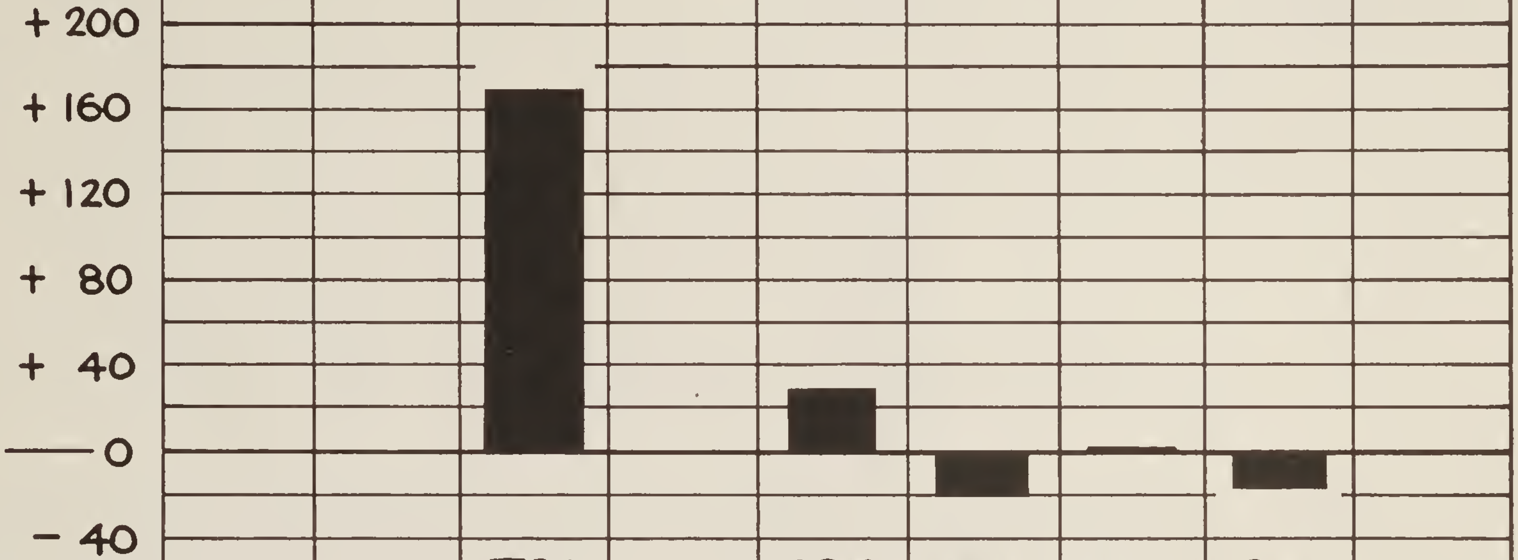
SKILLED TRADESMEN AND SKILLED OPERATIVES

SOME 165%* INCREASE FORESEEN IN DEMAND FOR THOSE WITH SPECIALIZED EDUCATION

CHART VII

SKILLED TRADESMEN

1970 vs. 1965 % INCREASE (+) OR DECREASE (−) BEYOND AVERAGE 17% GROWTH NORM

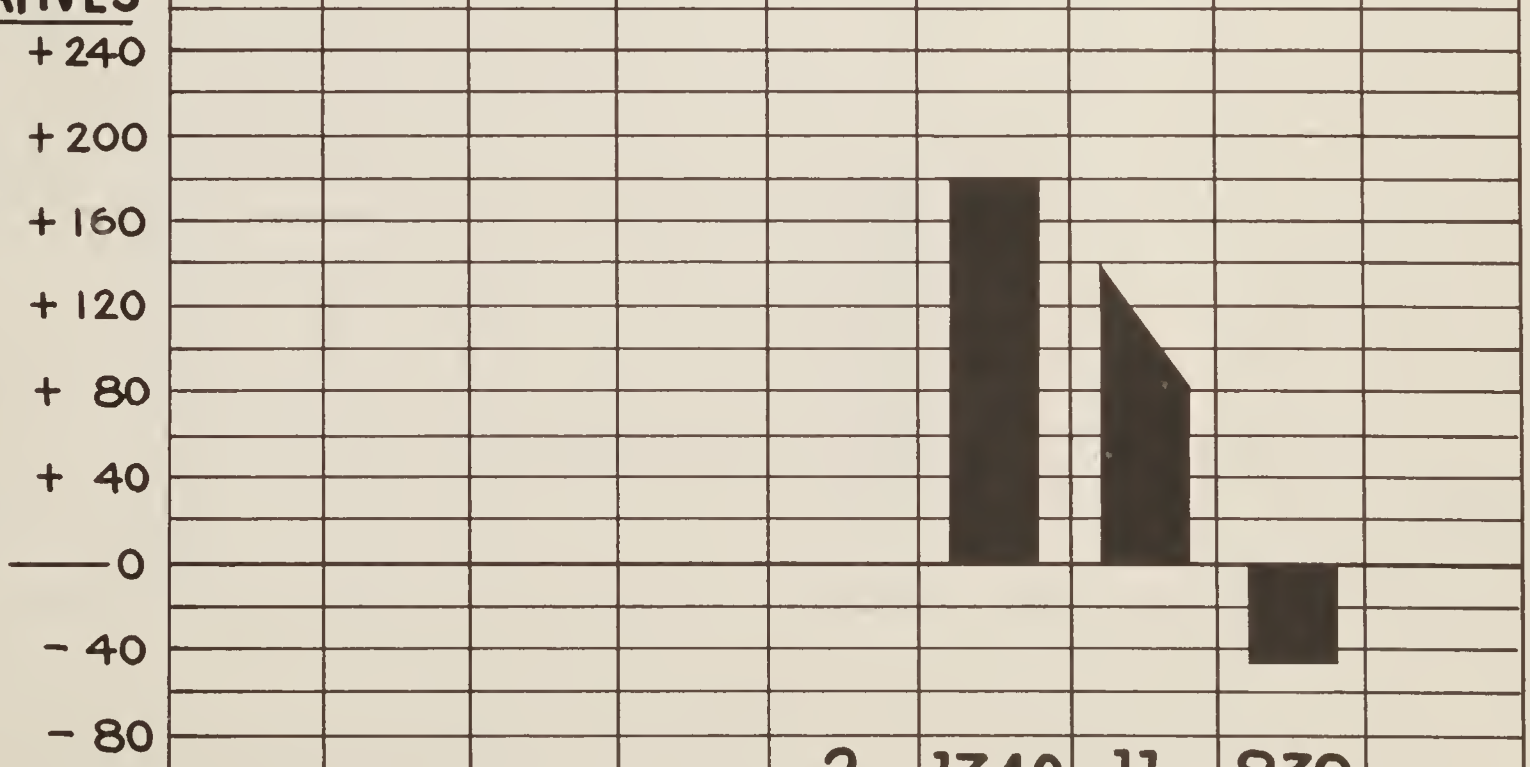


	UNIVERSITY		POST HIGH SCHOOL		HIGH SCHOOL & SKILLED				SEMI-SKILLED OR UNSKILLED
	POST GRAD.	FIRST DEGREE ONLY	TECHNOLOGICAL INST.	ALL OTHERS	HIGH SCHOOL	TECH HIGH	TRADE SCHOOL	NON-H.S. OR UNDET.	
1970 vs. 1965 % INCREASE (+) OR DECREASE (−)			+167		+29	−20	+2	−18	
EMPLOYEES EACH QUALIFICATION 1970			310		124	386	169	239	
EMPLOYEES EACH QUALIFICATION 1965			99		82	413	141	249	

CHART VIII

SKILLED OPERATIVES

1970 vs. 1965 % INCREASE (+) OR DECREASE (−) BEYOND AVERAGE 17% GROWTH NORM



	POST GRAD.	FIRST DEGREE ONLY	TECHNOLOGICAL INST.	ALL OTHERS	HIGH SCHOOL	TECH HIGH	TRADE SCHOOL	NON-H.S. OR UNDET.	SEMI-SKILLED OR UNSKILLED
1970 vs. 1965 % INCREASE (+) OR DECREASE (−)					* *	+180	+	−44	
EMPLOYEES EACH QUALIFICATION 1970					2	1340	11	839	
EMPLOYEES EACH QUALIFICATION 1965					2	408	0	1283	

* ALL PERCENTAGE INCREASES OR DECREASES ARE NET DEVIATIONS ABOVE OR BELOW 17% GROWTH NORM OF THE TEST GROUP.

* * GROUPS OF UNDER 10 PERSONS (1970) CONSIDERED NOT SIGNIFICANT.

Chart IX (semi-skilled operatives) and Chart X (labourers) contain the most marked changes in the 1970 projection.

Both of these occupations will draw heavily from high school graduates. Semi-skilled Operatives constitute 11½ % of total employment in both years, but while only 10% have a high school education in 1965, that figure is projected to rise to 43% in 1970.

Labourers are expected to constitute 7.3% of total employment in 1970, as compared with 4½ % in 1965. But the 15% with high school education in 1965 will increase to 40% in 1970.

SEMI-SKILLED OPERATIVES & LABOURERS

OVER 300%* INCREASE PROJECTED IN DEMAND FOR THOSE WITH HIGH SCHOOL EDUCATION

CHART IX

SEMI-SKILLED OPERATIVES

1970 vs. 1965 % INCREASE (+) OR DECREASE (-) BEYOND AVERAGE 17% GROWTH NORM

	UNIVERSITY		POST HIGH SCHOOL		SEMI-SKILLED AND UNSKILLED				
					HIGH SCHOOL OR EQUIVALENT				NO QUALIFICATION
	POST GRAD.	FIRST DEGREE ONLY	TECHNOLOGICAL INST.	ALL OTHER	HIGH SCHOOL	TECH HIGH	TRADE SCHOOL	NON-H.S. OR UNDET.	
%					+348			-55	+13
EMPLOYEES EACH CLASSIFICATION 1970					1681			967	1235
1965					319			1825	929

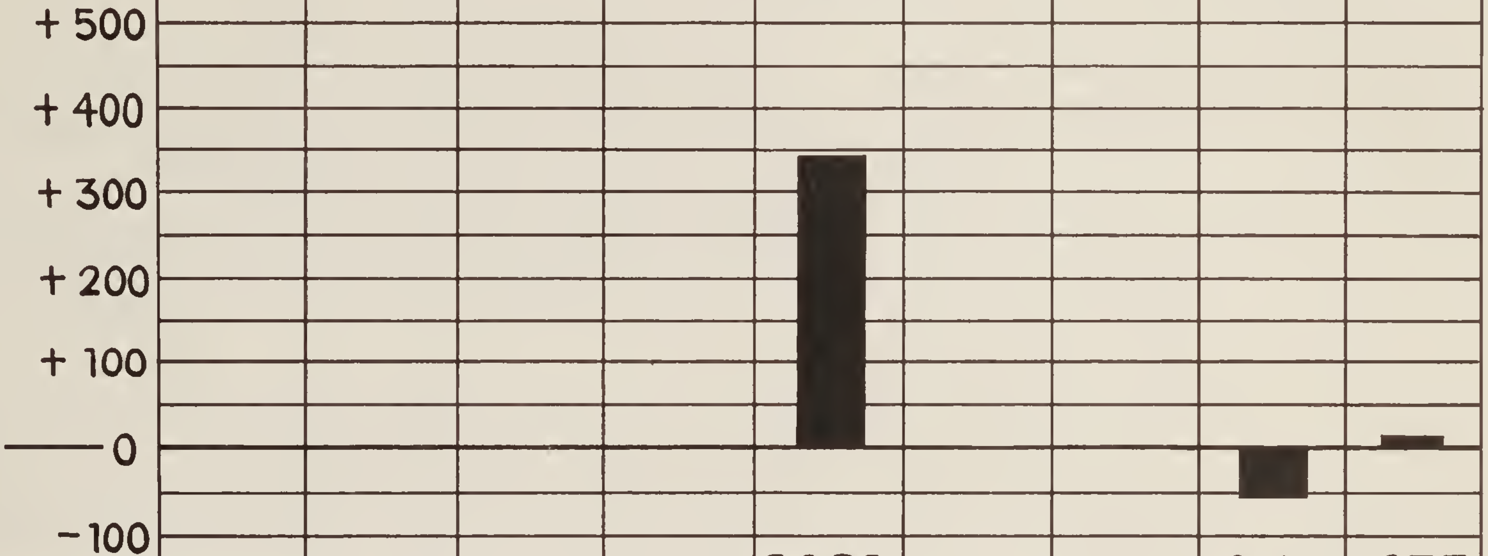
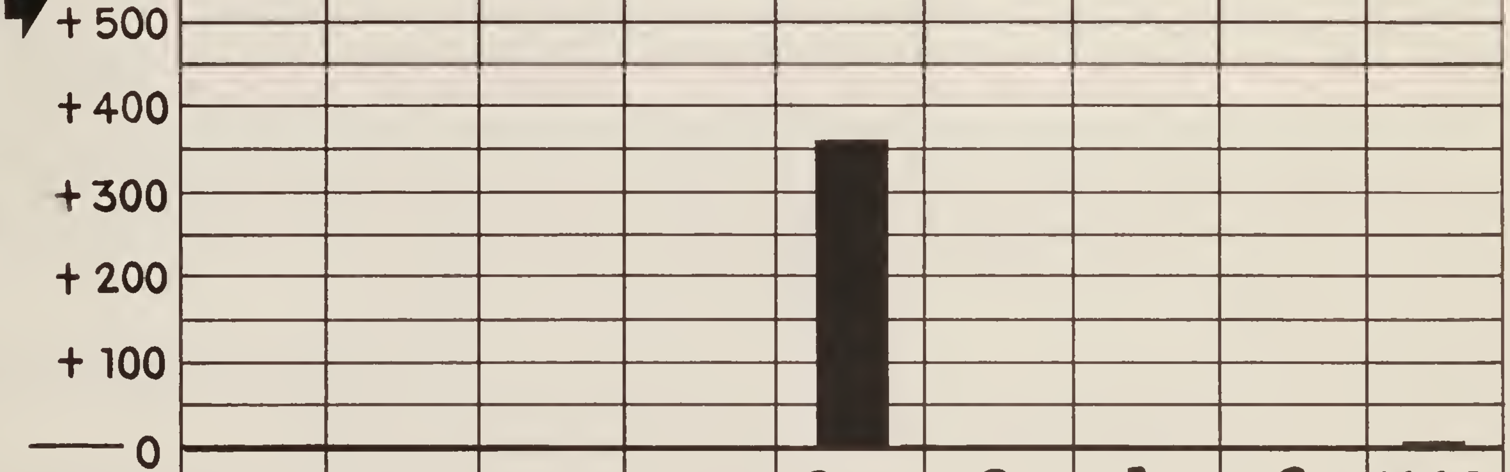


CHART X

LABOURERS

1970 vs. 1965 % INCREASE (+) OR DECREASE (-) BEYOND AVERAGE 17% GROWTH NORM

	POST GRAD.	FIRST DEGREE ONLY	TECHNOLOGICAL INST.	ALL OTHER	HIGH SCHOOL	TECH HIGH	TRADE SCHOOL	NON-H.S. OR UNDET.	NO QUALIFICATION
%					+358	**	**	**	+5
EMPLOYEES EACH CLASSIFICATION 1970					977	2	1	6	1468
1965					182	2	1	6	1194



* ALL PERCENTAGE INCREASES OR DECREASES ARE NET DEVIATIONS ABOVE OR BELOW 17% GROWTH NORM OF THE TEST GROUP.

** GROUPS OF UNDER 10 PERSONS (1970) CONSIDERED NOT SIGNIFIGANT.

APPENDIX "A"—preliminary letter to prospective participating company

ONTARIO ECONOMIC COUNCIL

950 YONGE STREET
TORONTO 5, ONTARIO

Dear Mr. President:

The Economic Council of Canada in its First Annual Review emphasized the need for further improvement in Canada's manpower policies.

As you know we are presently seriously hampered by a major lack of forward information on skill requirements — particularly for the mid-term future. This gap makes it exceedingly difficult adequately to plan basic educational and vocational training and retraining.

As one step toward obtaining supporting information, the Ontario Economic Council is seeking the co-operation of a number of companies representing a cross-section of commerce and industry. The objective is to determine what occupational trends are likely to evolve over the next five years, primarily in terms of fairly broad occupational groups, and what these trends should mean in terms of future education and technical training.

This study is being conducted by the Ontario Economic Council with a group of Ontario companies in parallel with a similar study initiated by the Economic Council of Canada. In this manner, duplication will be avoided, yet a useful co-relation of results should be achieved.

Messrs. C. H. Van Horne and C. R. Tindal are the members of the Ontario Economic Council staff associated with this project. One or the other will be available as required to explain in detail the information desired. They will also be interested in obtaining background information on future capital expenditure trends or any other major changes which bear upon manpower requirements. It goes without saying that any information which you give them will of course be treated in the strictest confidence. In no case, will any information be identified as coming from any particular company.

It is hoped that from this project there will eventually emerge a closer understanding between business and industry and the governmental authorities who jointly share the responsibility for educating and training.

Could you please advise us the name of the officer in your company with whom contact should be made in discussing details of the proposed survey.

Thank you very much for your help.

Yours very truly,

WH Cranston

W. H. Cranston,
Chairman.

APPENDIX "B"—instructions to confirmed participants

The Summary Form (manilla folder) enclosed indicates the manner in which the information from each company should be submitted; it provides for a comparison of your 1965 manpower position with your anticipated requirements for 1970.

Also enclosed is an Annual Form (blue folder) the use of which is optional to the participating company. Some companies prefer to project their 1970 manpower requirements on a year-to-year basis. This form is suggested as a worksheet for such internal purposes.

General Structure of Analysis

These forms have been designed to provide for the cross classification of all employees by education or training on the one hand and by occupational group on the other. The headings across the top of the forms cover the education or training of all employees ranging from those with post graduate university degrees, to unskilled workers where no background training is required. The vertical headings on the left-hand side of the forms classify all employees according to occupational groupings. On the Summary Form, the vertical and horizontal classifications in combination should provide a focus on trends in manpower demands on the educational and training system during the period under study.

Your 1965 figures will, of course, show your present work force classified as to occupational group and the corresponding actual educational or training qualifications where the latter can be determined. Figures for future years should take into account not only anticipated changes in numbers expected to be employed in the various occupational groups but also any changes in the qualifications desired for each.

When forecasting future manpower requirements, please do so on the assumption that adequate supplies will be available in all categories to meet total needs. It is our understanding that at present, some firms are inclined to modify the number of certain types of personnel sought to conform with expectations of available supplies.

It is important to recognize that many of your present personnel will still be on your staff in 1970 even though they may lack the ideal education and/or training you seek in new employees being hired. Consequently, progress over the next five year period towards the ideal eventual qualifications for all employees will be made mainly through additions to your present work force. Nevertheless any significant trends in the educational or training qualifications being sought should be clearly evident for our purposes.

We would like to emphasize that the primary object of our study is to obtain information on the demands on public educational and training systems rather than on training programmes conducted within companies.

Classification under the various educational and training institutions is to apply only to graduates of such institutions. If there are instances where a significant number of employees have pursued but not reached graduate level, they may be included in Class "B" under "All Others" and should be identified in any accompanying note.

These forms do not provide for refresher or re-training type programmes outside the company. Public programmes of this type are, however, being offered and may assume increasing importance in the future. We suggest that where such training is desired, companies use the spare column at the right hand side of the form for this purpose, adding an appropriate descriptive heading. For our purposes it is important that we have a note from you indicating the type of training involved such as courses for senior management, middle management, foremen, specialized skills etc.

Occupational Groups

Recognizing the problems involved in forecasting manpower requirements, the occupational classification is broken down into fairly broad groups only. It may be however, that for some companies, our breakdown is still too detailed. You may consider it feasible, for example, to project your requirements of engineers as a group only, believing it unnecessary to be concerned with the various specific types of engineers listed.

If such is the case, grouping into a single category is satisfactory for our purposes, not only as applied to engineers but also to the physical scientists, the administrative group and the technicians.

A question may arise about the classification of an employee who carries the status of an engineer for example, but who does not hold an engineering degree. We suggest that such a person should be included with the engineers in the occupational group but shown under his appropriate educational heading in the horizontal classification.

We are aware that the specific occupational designations we have used may not account for the entire work force in all of the companies in our survey and as a result, most occupational groups provide an "other" category. Unless you consider that occupations falling into one of these residual categories are especially important and should be identified, we suggest that all occupations, apart from those listed, be grouped under the "other" headings.

The Professional group should include all employees so qualified by education, regardless of function being performed. For example, employees with professional qualifications but performing administrative or sales duties should be listed under their professional heading. In case an individual holds degrees in two fields, or should to meet future requirements, he should be listed under both. As an example in this connection, if a manager holds or should hold an engineering degree, and a degree (likely post graduate) in business administration, he should be listed both as an engineer and as a graduate in business administration.

The Accountants group under the heading "Other Professional Occupations" is to include Chartered Accountants, Registered Industrial Accountants, Certified General Accountants and Certified Public Accountants.

The Skilled Tradesmen and Craftsmen group is to include such occupations as electricians, machinists, carpenters, etc., and will likely all fall in Class "C".

The Operatives group is to include production workers such as assemblers and operators of production or processing equipment. Applying the general rule of thumb that workers whose occupations require two years or more of training are usually designated as "skilled", it is anticipated that most operatives will fall in Class "D" though some may belong in Class "C".

It is anticipated that in general, companies may be confronted with several possibilities when classifying some employees. In these cases we would be grateful if we could be advised in due course of the choice adopted as this information will be of considerable importance to us in interpreting and compiling data received from various sources.

Education and Training

Only a couple of comments appear necessary with regard to the breakdown of education and training into the various levels shown across the top of the forms.

The "All Others" category under Class "B" will contain such training as leads to the accounting degrees CA, RIA, CGA and CPA. Under Class "C", the "Non High School or Undetermined" heading is designed to cover individuals whose jobs presently have an entry-requirement of full high school, but who have acquired competence in their occupations with less than full high school training: It is suggested also that this heading will cover those present workers whose educational backgrounds are unknown and very difficult to obtain but where it may be assumed that high school education was not completed. In areas such as these, it is future educational and training requirements which will be of most significance to our work.

It should be noted that the educational and training breakdown conforms to the present system. If in projecting future requirements, any companies would like to have other types of training available than are currently being offered, comments to this effect would be most appropriate.

For the purpose of this project we are assuming that during the forecast period the growth of the Canadian economy will not be adversely affected by international developments or a serious recession.

Intrepretations of Working Form

1. It may be helpful to your analysis if the box heading entitled "Distribution According to Education or Training" be read as follows — "Distribution According to *Required* Education or Training."
2. In a mix of present educational backgrounds, education short of full High School but in excess of Grade 10 may be recorded as full High School; Grade 10 only, or less, may be recorded as non-High School.
3. Foremen (except for other specific reasons), will generally be reported under Administrative.
4. Many individuals with high educational qualifications are found doing unskilled or semi-skilled work (usually short-term).
   Report such according to the job requirements only.
5. If Engineers or other professional personnel are employed in Sales (or other "non-degree occupations") the duplication should be foot-noted.
6. Separation of clerical staff into Male and Female may assist the quantitative identification of educational qualifications.
7. Class D applies to work for which the educational specification requires little, other than literacy.

APPENDIX "D"—Summary Form for Submission of Returns

ONTARIO ECONOMIC COUNCIL
ANTICIPATED TRENDS IN MANPOWER REQUIREMENTS
1965 to 1970

SUMMARY FORM
Company Name—
Year—

OCCUPATIONAL GROUP	DISTRIBUTION ACCORDING TO EDUCATION OR TRAINING																									
	CLASS "A" UNIVERSITY TRAINING								CLASS "B" POST HIGH SCHOOL TRAINING BUT NOT UNIVERSITY				CLASS "C" HIGH SCHOOL TRAINING AND SKILLED WORKERS										CLASS "D" SEMI SKILLED AND UNSKILLED WORKERS			
	Post Graduate				Graduate												Vocational or Trade School				Non High School or Undetermined					
	Technical & Scientific		All Others		Technical & Scientific		All Others		Technological Institute		All Others		High School		Technical High School		High School		Non High School							
	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970
Professional																										
Engineers																										
Chemical																										
Civil																										
Electrical																										
Mechanical																										
Mining and Metallugical																										
Other																										
Physical Scientists																										
Chemists																										
Geologists																										
Physicists																										
Other																										
Other Professional Occupations																										
Accountants																										
Economists																										
Mathematicians																										
Other																										
Administrative																										
Graduates in Business Administration																										
Commerce and Finance																										
General Arts																										
Other																										
Other																										
Technical																										
Draughtsmen																										
Engineering Technicians																										
Laboratory Technicians																										
Other																										
Clerical																										
Sales																										
Technical																										
Non-technical																										
Skilled Tradesmen and Craftsmen																										
Operatives																										
Laborers																										

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Assessing educational
requirements for
skillpower.

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